

Electronic Supplementary Information (ESI) for

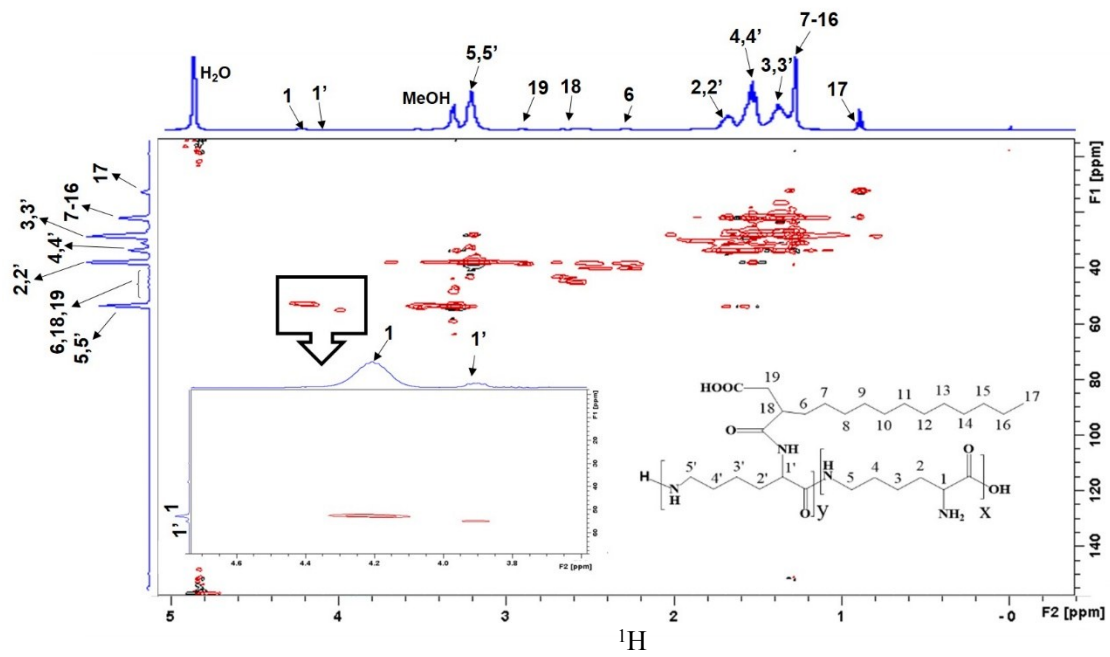
Cytosolic delivery of quantum dots mediated by freezing and hydrophobic polyampholytes in RAW 264.7 cells

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¹³C

Fig. S1 NMR signal assignment of PLL-DDSA(10) in methanol-d₄.

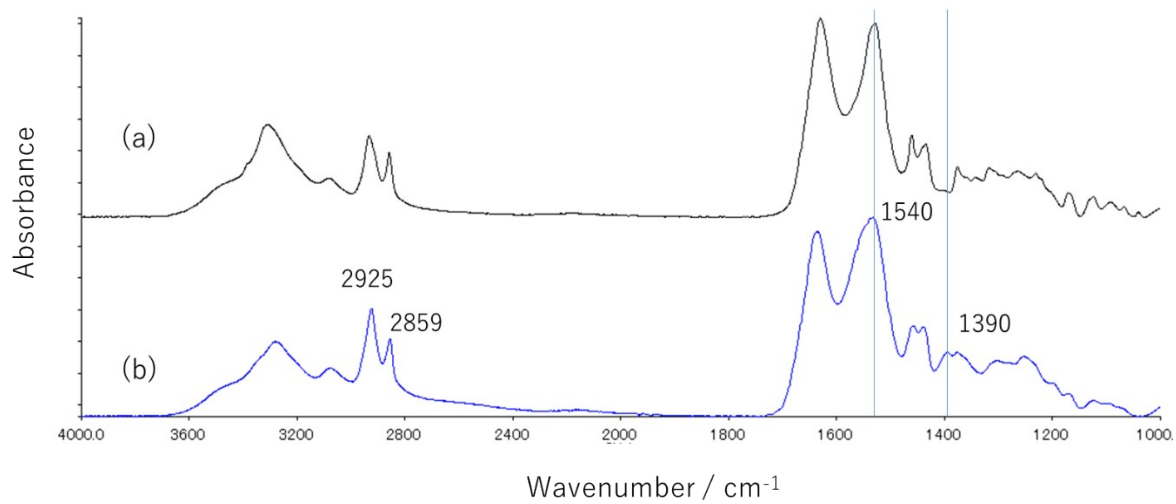


Fig. S2 ATR-FTIR spectra of (a) ϵ -PLL and (b) PLL-DDSA(10).

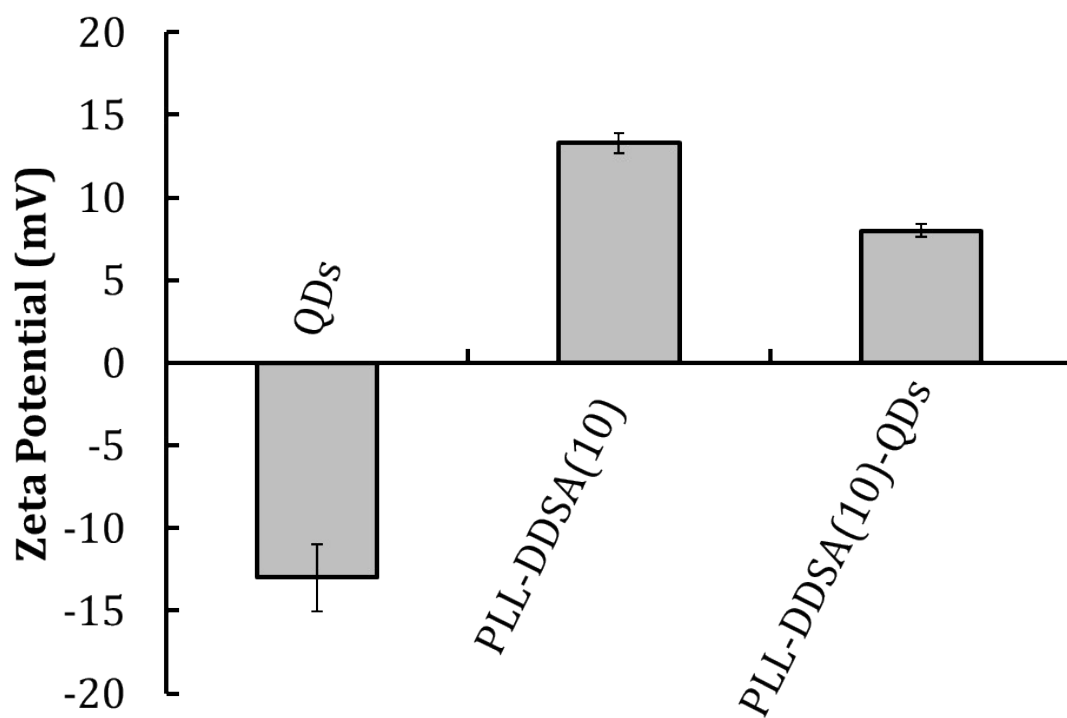


Fig. S3 Zeta potential of QDs, PLL-DDSA(10), and PLL-DDSA(10)-QDs determined using DLS . Data are expressed as mean \pm SD.

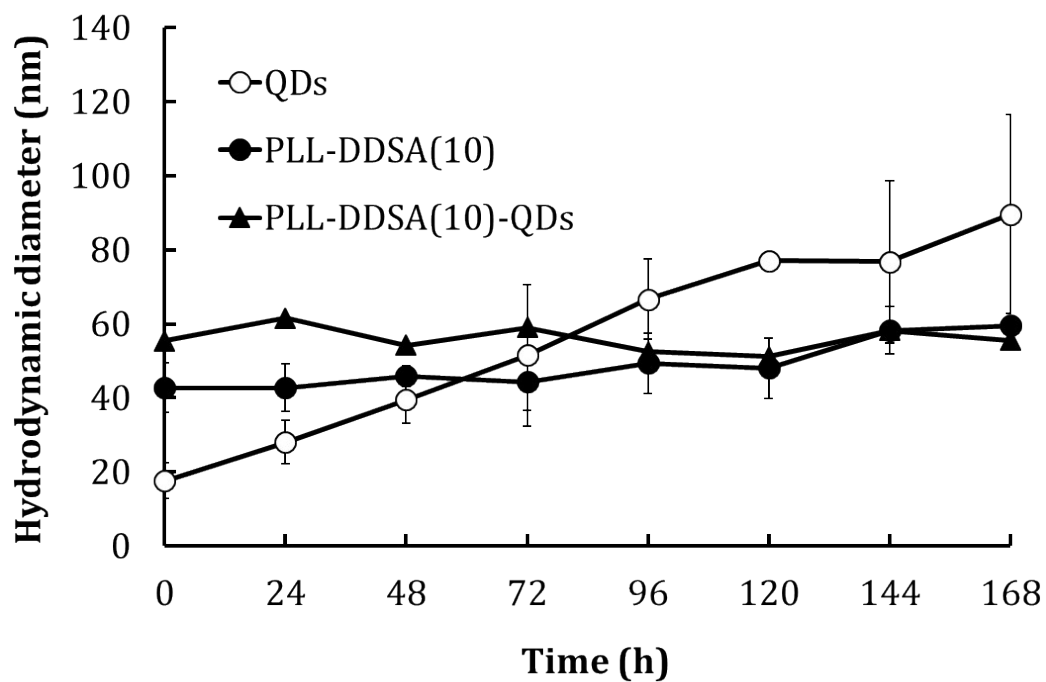


Fig. S4 Particle size stability of QDs only and PLL-DDSA(10)-QDs over 7 days at 25 °C.

Data are expressed as mean \pm SD.

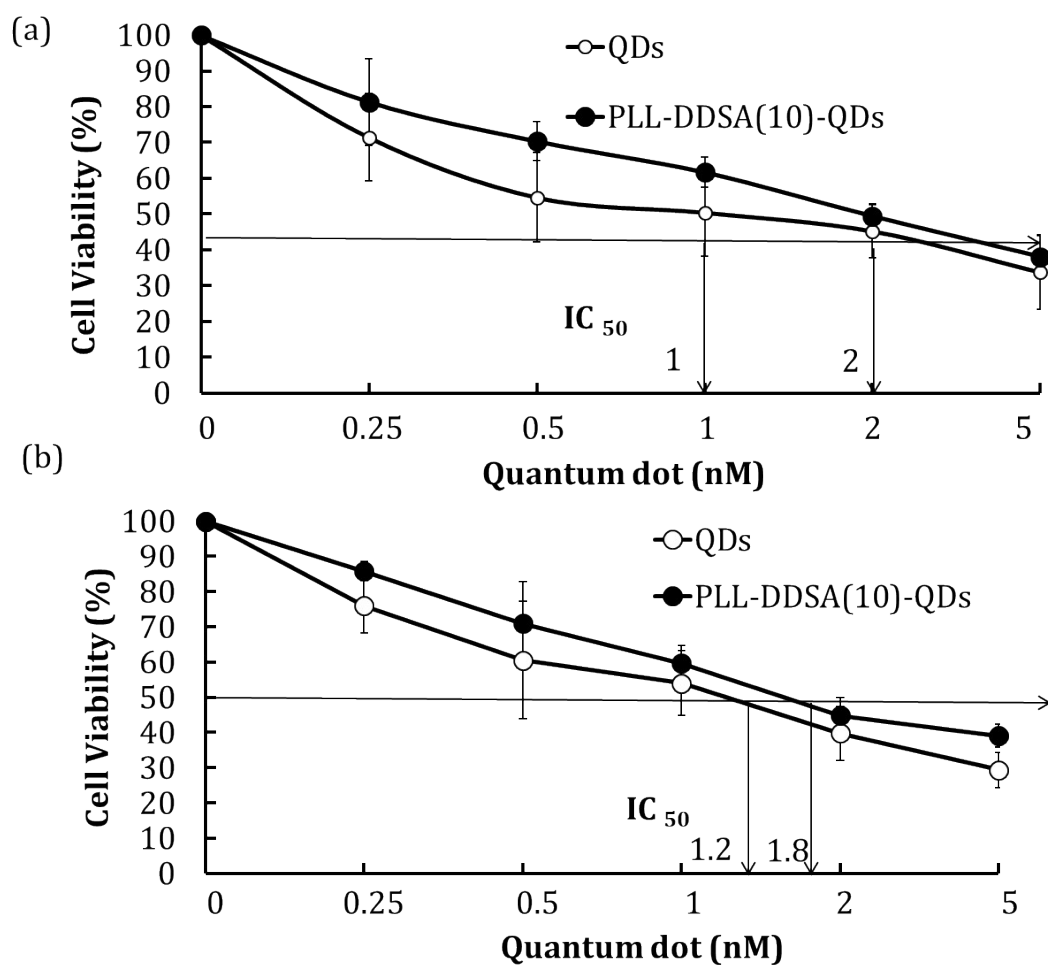


Fig. S5 Cytotoxicity of QDs alone and PLL-DDSA(10)-QDs in fibroblast L929 cells and RAW 264.7 macrophages. The cells were incubated with different concentration of QDs for 48 h and analysed using MTT. The polyampholyte concentration was fixed, whereas the quantum dot concentration varied from 0 to 5 nM. IC₅₀ represents the concentration of QDs that caused a 50% reduction in the number of treated cells compared to the untreated control. (a) Fibroblast L929 cells and (b) RAW 264.7 macrophages. Data are expressed as mean \pm SD.

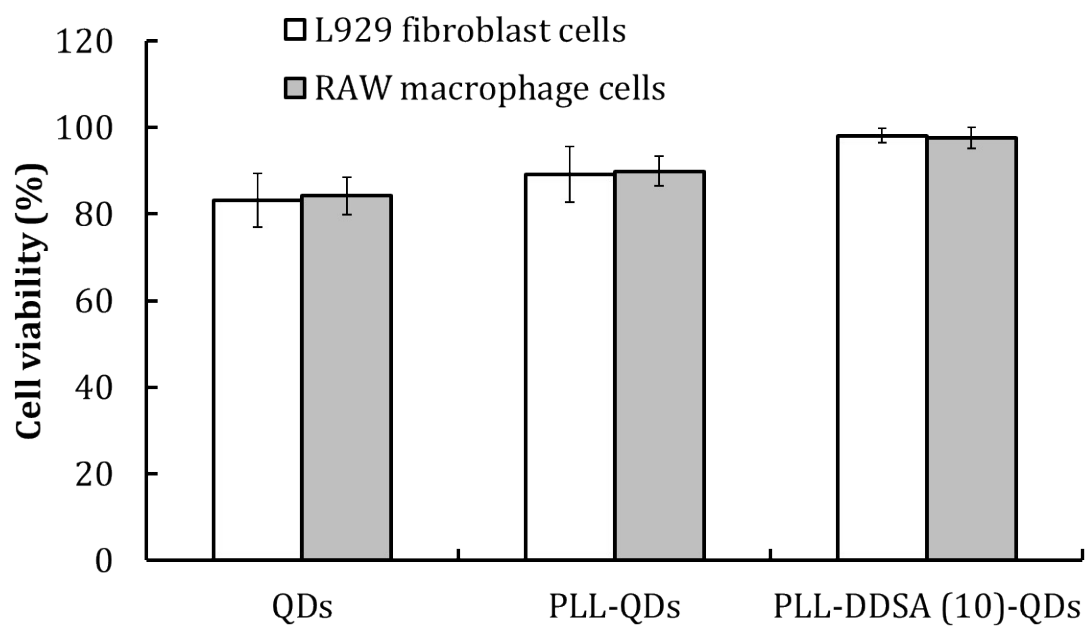


Fig. S6 Cell viability in the presence of QDs alone or QD complexes with PLL and PLL-DDSA (10) in the presence of a cryoprotectant. Data are expressed as mean \pm SD.

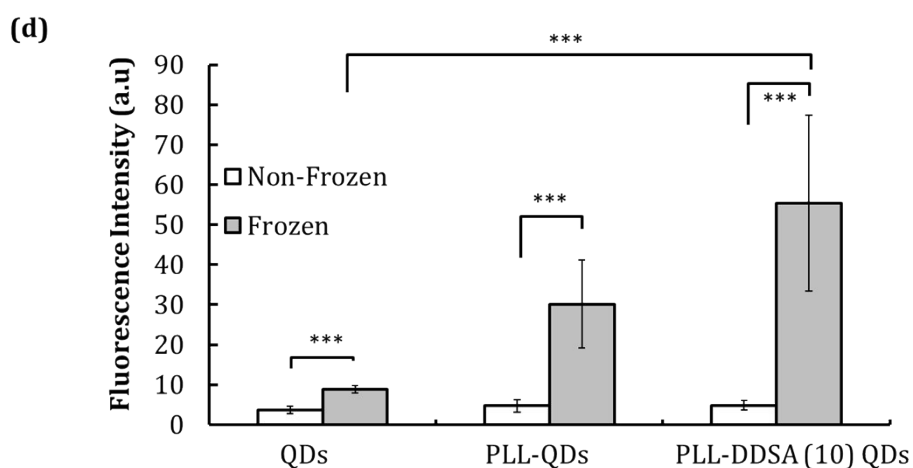
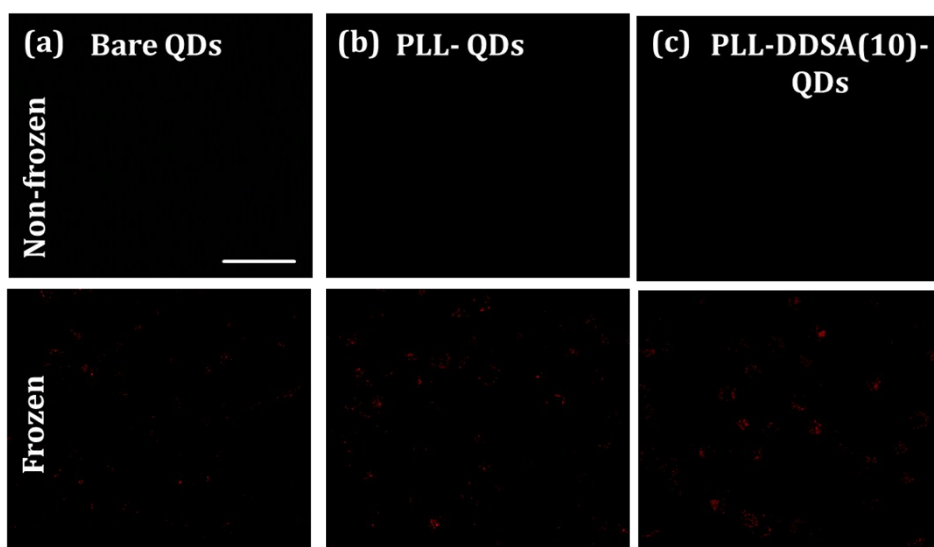


Fig. S7 Confocal images of L929 fibroblast cells showing the adsorption of QDs after being frozen at $-80\text{ }^{\circ}\text{C}$ in a cryoprotectant. After 24 h, the cells were thawed at $37\text{ }^{\circ}\text{C}$ and the adsorption was investigated using confocal microscopy. Scale bar: $50\text{ }\mu\text{m}$. The panels show the (a) bare QDs, (b) PLL-QDs, and the (c) PLL-DDSA(10)-QDs. (d) Mean fluorescence intensity of the adsorbed QDs was determined after freezing using CLSM of RAW 264.7 cells. Data are expressed as the mean \pm SD. *** $P < 0.001$.